YUVACHEVA, N.Ya.; LIPOVSKAYA, T.N.; AVERBUKH, N.M., inzh., red.;
YELAGINA, T.A., tekhn.red.

[High-strength magnesium cast iron; recommended bibliography]
Vysokoprochnye magnievye chuguny; rekomendatel'nyi spisok literatury. Pod red. N.M.Averbukh. Leningrad, Ob-vo po rasprostraneniiu polit. i nauchn.znanii RSFSR, 1959. 70 p.
(MIRA 13:2)

1. Leningradskiy dom nauchno-tekhnicheskoy propagandy.
(Bibliography--Cast iron)

LIPOVSKAYA, V.I.; SHCHERBAKOVA, Ye.Ya.

Distribution of the ten-year maximum thicknesses of the snow cover of varying probability in the European part of the U.S.S.R. Trudy GGO no.149:38-47 '63. (MIRA 17:1)

LIPOVSKAYA, V.I.

Use of Kolmogorov's criterion in determining the distribution curves for monthly precipitation totals. Trudy GGO no.149:35-37 '63. (MIRA 17:1)

LIPOVSKAYA, V.I.; SHCHERBAKOVA, Ye.Ya.

Prospective maximum decade heights of the snow cover of varying probability on the territory of the U.S.S.R. Trudy GGO no.161:10-22 '64. (MIRA 17:9)

LIPOVSKAYA, Valentina Mikhaylovna; SHIROKOV, K.A., red.

[Experience in the work of the volunteer bureau of technical information in the Kirov Spinning and Yarn Combine] Opyt raboty obshchestvennogo biuro tekhnicheskoi informatsii priadil'no-nitochnogo kombinata im. S.M. Kirova. Leningrad, 1964. 26 p. (MIRA 18:4)

LIPOVSKIY, A. A., RAZUMOVSKIY, A. N., YAKIMOVA, P. P., ZAYDEL', A. N., and KALITEYEVSKIY, N.I.

"Spectral Analysis of the Gd, Eu, and Sm Content of Metals," by A. N. Zaydel', N. I. Kaliteyevskiy, A. A. Lipovskiy, A. N. Razumovskiy, and P. P. Yakimova, Vestnik Leningradskogo Universiteta, Vol 11, No 4, Oct-Dec 56, pp 18-40

In the introduction to the article, it is pointed out that a number of rare earth elements including Gd, Eu, and Sm have exceptionally large cross sections of thermal neutron capture (38,000 barns for Gd, 2,500 barns for Eu, and 8,000 barns for Sm), which are equaled only by that of Cd (2,800 barns) and that consequently many materials must be freed of even the smallest trace of these elements. To accomplish this, sensitive methods of analysis are required: the sensitivity of the determinations must be no less than of the order of 0.0001%. It is stated that although two US papers on the spectroscopic determination of small amounts of rare earths in uranium and one US paper on the determination of rare earths in zirconium have been published, a reliable, universally applicable method for the determination of rare earths in metals is lacking.

The authors then say that work on the development of a suitable method for this purpose was conducted at their laboratory during the period 1949-1954, and proceed to outline the results of this work, which dealt with the development of a set of analytical procedures based on emission spectroscopy. They first discuss the method of concentration of rare earth elements used by them, which involves introduction of lanthanum that acts as a carrier. A general section on the spectral analysis of the concentrates obtained by the method described follows. A detailed description of the determination of traces of Gd, Eu, and Sm in thorium is then given. According to the description, the rare earth elements are separated from thorium before the spectral analysis by extracting the nitrates with ether. The effects on the analytical procedure of impurities consisting of iron, aluminum, silicon, chromium, and cerium are discussed. The procedure for the determination of Gd, Eu, and Sm in uranium, which is described in the next section, is essentially the same as that for thorium.

In the section on the determination of Gd, Eu, and Sm in beryllium, the statement is made that beryllium oxide which is used in nuclear power technology must be pure, and that the determination of traces of Gd, Eu, and Sm in beryllium is therefore of considerable practical importance. Separation of the rare earths (including the La carrier) from Be in the procedure described is achieved by precipitation with oxalic acid from a $BeCl_2$ solution with the use of calcium as an additional carrier.

In connection with the description of the procedure for the determination of Gd, Eu, and Sm in bismuth, it is stated that Bi has a small cross section of thermal neutron capture and can be used as a reactor coolant. Under the circumstances, according to the article, procedures by which one may check for the presence in bismuth of rare-earth elements with a large cross section of neutron capture are essential. Separation of the rare-earth elements from bismuth is effected by the hydrolytic decomposition of bismuth chloride during the course of electrolysis.

The section on the determination of rare-earth impurities in zirconium is introduced by the statement that zirconium is used as a construction material for nuclear reactors, because it has a small cross section of thermal neutron capture and a sufficiently high stability at high temperatures. According to the article, zirconium for nuclear reactor applications must be free of rare-earth elements with a large neutron capture cross section. The chemical procedure for the separation of the rare earth elements from zirconium, which is based on the precipitation of Zr in the form of its phosphate and that of the rare earth elements in the form of their oxalates, is rather complicated. It is described in detail and illustrated with a chart.

In conclusion the authors say that the results of the work done by them on the determination of Gd, Eu, and Sm in Th, U, Be, Bi, and Zr confirm the advisability of using the analytical procedure which they have developed. They add that they have also done work on the determination of rare earth elements in Fe, Al, and Mg in connection with investigations on the rare-earth content in soils and checked the possibility of applying their method in the determination of Gd, Eu, and Sm in Cu. They found that the sensitivity of the determination of Gd, Eu, and Sm in all the metals mentioned above amounted to approximately 10^{-5}%, and that this sensitivity can be increased still further by subjecting larger samples to analysis. For the reasons stated, they assume that the method used by them is satisfactory and generally applicable for the purpose of determining rare-earth elements in metals.

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83. Nitrate Complex of Uranyl in Acetone Investigated

"Concerning the Formation of a Nitrate Complex of Uranyl in Acetone," by V. M. Vdovenko, A. A. Lipovskiy, and M. G. Kuzina, Zhurnal Neorganicheskoy Khimii, Vol 2, No 4, Apr 57, pp 970-974

The formation of a complex uranyl compound in acetone when aniline nitrate or pyridine nitrate are used as donors of nitrogroups was investigated. The constitution of the complex compound was established by the spectrophotometric method. The constant of the stability of this compound was determined. It was shown that the stability of the complex $[UO_2 (NO_3)_3]$ ion depends on the type of solvent used and the content of water in the organic phase. A new complex compound of pyridine nitrate with uranyl nitrate was isolated. Its composition was found to correspond to the empirical formula $(C_5H_5NH)_2 UO_2 (NO_3)_4 \cdot 2H_2O$. In the ultraviolet part of the absorption spectrum of the complex $[UO_2(NO_3)_3]$ ion a regular structure was found against a background of continuous absorption. (U)

82. **Extraction of Uranyl Nitrate With Dibutyl Ether Investigated**

"The Distribution of Nitric Acid and Uranyl Nitrate Between an Aqueous Solution and Dibutyl Ether," by V. M. Vdovenko, A. A. Lipovskiy, and M. G. Kuzina, Zhurnal Neorganicheskoy Khimii, Vol 2, No 4, Apr 57, pp 975-979

The distribution of nitric acid between aqueous solutions and dibutyl ether was investigated. The high solubility of nitric acid in the ether is explained by the formation of an oxonium compound. The distribution of uranyl nitrate between an aqueous solution containing nitric acid an dibutyl ether was investigated in dependence on the concentration of nitric acid in the aqueous phase. It was established that, as the concentration of nitric acid in the aqueous phase increases, the concentration of the complex $[UO_2(NO_3)_3]$ ion in the dibutyl ether also increases. The reduction of the coefficient of distribution of uranium at very high concentrations of nitric acid is explained by a competition between the substances being extracted. (U)

Lipovskiy, A.A.

5(2)

PHASE I BOOK EXPLOITATION SOV/1727

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Extraction, Analysis and Application) Moscow, Izd-vo AN SSSR, 1958. 331 p. 2,200 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. N. Zaozerskiy, Doctor of Chemical Sciences, R. V. Koglyarov, Candidate of Technical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences; Eds. of Publishing House: D. N. Trifonov and T. G. Levi; Tech. Ed.: S. G. Markovich.

PURPOSE: This book is intended for scientists, chemists, teachers and students of higher educational institutions, chemical and industrial engineers, and other persons concerned with the extraction, preparation, use, or study of rare earth elements.

COVERAGE: This collection contains reports presented at the June 1956 Conference on Rare Earth Elements at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR. The articles treat chemical methods of separating rare earth mixtures, methods of processing rare earth ores, ion exchange chromatography, chemical analysis, and some industrial applications of rare earths. Aside from contributing authors, the editors mention the following Soviet scientists, who are studying rare earth elements, rare earth deposits, extraction methods, and the preparation of oxides and salts: Martynov, Mel'nikov, Khrushchev, Melikov, Pisarzhevskiy, Chernyak, Tanatar, Belousov, Zhukov and especially, N. A. Orlov, who first obtained the majority of rare earth elements in the pure state, separated many complex molecular compounds of these elements, and determined their specific properties. References are given at the end of each article.

TABLE OF CONTENTS:

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ZAYDEL', A.N.; KALITEYEVSKIY, N.I.; LIPOVSKIY, A.A.; RAZUMOVSKIY, A.N.; YAKIMOVA, P.P.

Spectrochemical determination of Gd, Eu, and Sm in metals.
Fiz.sbor. no.4:37-40 '58. (MIRA 12:5)

1. Fizicheskiy institut Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A.Zhdanova.
(Gadolinium--Spectra) (Europium--Spectra) (Samarium--Spectra)

AUTHORS: Kaliteyevskiy, N. I., Lipovskiy, A. A., 75-13-3-24/27
Razumovskiy, A. N., Yakimova, P. P.

TITLE: Spectroscopic Analysis by Means of Evaporation (Spektral'nyy analiz metodom ispareniya). Communication 6. The Determination of Cadmium, Germanium, Indium, Gallium, Gold, Antimony and Lead in Pitchblende (Soobshcheniye 6. Opredeleniye kadmiya, germaniya, indiya, galliya, zolota, sur'my i svintsa v zakisi-okisi urana)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp. 372-373 (USSR)

ABSTRACT: The principles for methods of evaporation were published in earlier papers (References 1-3). The possibility was also shown to determine admixtures of other elements in the difficultly volatile oxides U_3O_8, Al_2O_3, ThO_2, BeO_2 in this manner. The main condition for the efficiency of an evaporation method is a sufficiently high difference in the liquids among the admixtures to be determined and the chief component. In the present paper an evapora-

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tion method for the determination of a number of liquid elements (Cd, In, Ge, Ga, Au, Sb, Pb) in pitchblende is worked out. Experimental data on the evaporation of the admixtures were already described earlier (Reference 1). The evaporation is performed at the air, as on heating in a vacuum a decomposition of U_3O_8 under formation of the more easily volatile UO_3 takes place. In the determination of $\sim 3.10^{-5}\%$ cadmium and indium difficulties arose. At 1600-1700°C an intensive evaporation of CdO occurs, but it is not complete, as cadmium is anew deposited at the electrode on a temperature rise to 1900-2000°C. For avoiding a systematic error the evaporation must therefore by all means be performed at $\sim$2000°C. This temperature is also sufficient for completely expelling all oxides of all other elements to be determined (In, Ge, Ga, Au, Sb, Pb) and is not high enough to cause a marked evaporation of U_3O_8. For the determination of

Spectroscopic Analysis by Means of Evaporation. 75-13-3-24/27
Communication 6. The Determination of Cadmium, Germanium, Indium, Gallium, Gold, Antimony and Lead in Pitchblende

Cd, In and Sb weighed portions of 200 mg U_3O_8 had to be made.
When dividing this amount into four portions and four times evaporating the admixtures at the same electrode a more intensive blackening of the respective spectral lines occurs than in works with the total amount. The division therefore increases the sensitivity, but considerably retards the analysis. The technical data of the spectroscopic analysis of the sublimates are given in the paper.
As the sensitive lines of the elements to be determined lie in different parts of the spectrum it is expedient, simultaneously to photograph the spectrum on 2 spectrographs (ISP -22 or Q-24 and ISP -51). For the line In I (4511,3 Å) silver electrodes were used, as on copper electrodes this line of indium is overlapped by the intensive line Cu 4509,4 Å. For recording the line Cd II (2265 Å) which lies in the distant ultraviolet special photographic plates ("spektral'nyye", type III) were used. The

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mean quadratic error of an individual determination of one of the above-mentioned elements does not exceed 15-20%. The analytical lines of the individual elements used for the determinations and the different sensitivities are given. A. N. Zaydel' gave valuable advice, G. G. Kuid performed the control experiments.
There are 1 figure, 1 table, and 3 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: February 7, 1957

1. Evaporation--Applications 2. Pitchblende--Spectrographic analysis

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Lipovskiy, A.A.

5(2) PHASE I BOOK EXPLOITATION SOV/2402

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Production, Analysis, and Use) Moscow, Izd-vo AN SSSR, 1959. 331 p. 5,000 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Eds. of Publishing House: D. N. Trifonov and T.G. Levi; Tech. Ed.: S. G. Markovich; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. V. Tananayev, Doctor of Chemical Sciences, R. V. Kotlyarov, Candidate of Chemical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Ye. S. Sklyarenko, Candidate of Chemical Sciences.

PURPOSE: This book is intended for chemists in general and for geochemists and analytical chemists in particular.

COVERAGE: This collection of articles consists of reports presented at the Rare Earth Elements Symposium held in June 1956 at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy. The book may be divided into three sections: the characteristics, uses and production of rare earth elements (REE); the methods of analyzing REE; and the application of individual rare earth elements and REE mixtures in the glass and metallurgical industries, and their use as catalysts. Considerable space is devoted to the application of ion-exchange chromatography in the production of pure forms of all rare earth elements. The combinations of this method with other methods in separating REE on an industrial scale are discussed by D. I. Ryabchikov, Ye. S. Sklyarenko, and M. M. Senyavin. Chemical methods of separating REE compounds are discussed by I. V. Tananayev (who is said to be the first in the USSR to develop methods of processing REE), V. P. Kotlyarov, Z. F. Andreyeva, A. V. Nikolayev, and G. P. Aleksandrov. Quantitative X-ray spectral analytical methods are described by E. Ye. Vaynshteyn, and chemical methods of analysis by I. P. Alimarin and F. I. Pavlotskaya. The determination of REE impurities in pure products and atomic materials are discussed at length in three articles by A. N. Zaydel' and his associates. All articles are accompanied by photographs, diagrams, tables, and bibliographic references.

AVAILABLE: Library of Congress

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5(2), 21(7) SOV/78-4-4-23/44

AUTHORS: Vdovenko, V. M., Lipovskiy, A. A., Nikitina, S. A.

TITLE: On the Formation of Chloride Compl. Uranyl Compounds in Acetone (Ob obrazovanii khloridnykh kompleksnykh soyedineniy uranila v atsetone)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 4, pp 862-865 (USSR)

ABSTRACT: The formation of complex compounds of the uranyl ion in acetone with hydrochloric pyridine and hydroxylamine as Cl^- donors was investigated by the spectrophotometric method. The authors plotted the absorption spectra of the solutions and the dependence of the molar extinction coefficient on the concentration of the complex-forming substance for various wavelengths (Fig 1). Uranyl perchlorate hexahydrate was applied as an initial compound. With a ratio of the components $UO_2(ClO_4)_2$: $C_5H_5N.HCl$ = 1 the complex UO_2Cl_2 is formed. With increasing concentration of hydrochloric pyridine or, more precisely, hydroxylamine also the complex formation is intensified. The complex $UO_2Cl_3^-$ is herein formed with hydrochloric

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On the Formation of Chloride Complex Uranyl Compounds in Acetone

hydroxylamine. The absorption spectra of $UO_2(ClO_4)_2 \cdot 6H_2O$ and those of the chloride complex compounds of the uranyl ion in acetone are represented in figure 4. With the action of the uranyl chloride complex UO_2Cl_2 on hydrochloric pyridine a new compound is produced: $(C_5H_5NH)_2UO_2Cl_4$. The compound is insoluble in diethyl ether, cyclohexanone, tributyl phosphate, pyridine, benzene, and carbon tetrachloride. There are 4 figures and 7 references, 2 of which are Soviet.

SUBMITTED: January 17, 1958

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5(2)

AUTHORS: Lipovskiy, A. A., Chernyavskaya, N. B.

SOV/78-4-10-12/40

TITLE: Spectrophotometric Investigation of the Formation of Sulphuric Acid Complex Hydrides of Pu^{IV} in Nitric Acid Solution

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10, pp 2244-2247 (USSR)

ABSTRACT: The transuranic elements can be precipitated by potassium- or lanthanum sulphate. The exact form of the complex ions of Pu^{IV} has hitherto not been known. Therefore the investigation mentioned in the title was carried out in solutions of 1.5 normal nitric acid. Since the absorption spectra of the transuranic elements change in dependence on the composition of the solution, spectrophotometric methods (spectrophotometer of SF-2M type) could be applied. As can be seen in figure 1, on addition of K_2SO_4 a considerable change of the spectrum occurs. In order to find the form of the complex ions of Pu^{IV}, the dependence of the molar extinction coefficient of some absorption bands on the concentration of the potassium sulphate was illustrated graphically (Fig 2). In a similar way B. G. Pozharskiy and V. V. Fomin had proceeded in the investigation of the

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Spectrophotometric Investigation of the Formation of Sulphuric Acid Complex Hydrides of Pu^{IV} in Nitric Acid Solution

complex compounds of Pu^{IV} in sulphuric acid. It was found that plutonium forms a continuous series of sulphuric acid complexes. The rapid variation of the intensity of the absorption bands by small additions of sulphate ion already indicates the high stability of sulphuric acid complexes in nitric acid solution. This must be considered in the spectrophotometric determination of Pu^{IV} in nitric acid, since the presence of small amounts of sulphate ions significantly influences the molar extinction coefficient of the absorption bands λ = 476 mμ. The authors express their gratitude to V. I. Grebenshchikova for valuable advice. There are 2 figures and 4 references, 3 of which are Soviet.

SUBMITTED: July 2, 1958

5(2) 05864

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A. Kuzina, M.G. SOV/78-4-11-17/50

TITLE: The Distribution of Cs, Ca, Sr and La Among Aqueous Solution and Methyl-butyl Ketone in the Presence of Uranium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, pp 2502-2504 (USSR)

ABSTRACT: Uranium may be easily separated from elements of group I, II and III of the periodic system by means of the methyl-butyl ketone (MBK) in which the nitrates of these elements are unsoluble. As uranium is, under certain conditions, extracted also as $HUO_2(NO_3)_3$ (Ref 3), it is possible that Cs, Ca, Sr and La are included in the extraction in the form of the corresponding salts. The authors therefore investigated the distribution of Cs^{137}, Ca^{45}, Sr^{89}, Sr^{90} and La^{140} among the aqueous solution of nitrates and MBK in dependence on the uranyl-nitrate concentration. The latter was varied from 0.1 - 0.5 mole, the concentration of the nitrate ions was kept stable by a corresponding addition of $Ca(NO_3)_2$, and hydrolysis of the uranium salt could be prevented by the

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The Distribution of Cs, Ca, Sr and La Among Aqueous Solution and Methyl-butyl Ketone in the Presence of Uranium

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addition of 0.1n HNO_3. Table 1 demonstrates the influence exercised by the uranyl nitrate upon the distribution of Cs, Sr and La. Table 2 shows the same for Ca, the latter being determined radiometrically and gravimetrically. With rising concentration of $UO_2(NO_3)_2$ an increasing amount of Cs, Ca, Sr and La is carried away by MBK in the form of the salts $MUO_2(NO_3)_3$, the existence of which was proved by the absorption spectrum (Fig 1). There are 1 figure, 2 tables, and 5 references, 2 of which are Soviet.

SUBMITTED: July 2, 1958

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VDOVENKO, V.M.; LIPOVSKIY, A.A.; KUZINA, M.G.

Spectrophotometric investigation of the formation of complex nitrate compounds of plutonyl in acetone. Radiokhimiia 2 no.3:301-306 '60. (MIRA 13:10)

(Plutonyl compounds--Spectra)

VDOVENKO, V.M.; LIPOVSKIY, A.A.; KUZINA, M.G.

Spectrophotometric investigation of the formation of complex nitrate compounds of plutonyl in aqueous solutions, and extraction of Pu(VI) with dibutyl ether. Radiokhimiia 2 no.3:307-311 '60. (MIRA 13:10)
(Plutonyl compounds--Spectra) (Extraction (Chemistry))

VDOVENKO, V.M.; LIPOVSKIY, A.A.; KUZINA, M.G.

Formation of the complex compound neptunyl trinitrate. Radiokhimiia 2 no.3:312-314 '60. (MIRA 13:10)
(Neptunyl compounds)

LIPOVSKIY, A.A.

Symposium on the theory of extraction. Radiokhimiia 2 no.3:379-380 '60. (MIRA 13:10)
(Extraction (Chemistry))

VDOVENKO, V.M., LIPOVSKIY, A.A. NIKITINA, S.A.

Extraction of uranium from HCl solutions by means of tributyl phosphate. Zhur neorg. khim. 5 no.4:935-940 Ap '60.
(MIRA 13:7)

(Uranium) (Butyl phosphate)

22493
S/186/61/003/003/017/018
E071/E435

21.3200

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A. and Kuzina, M.G.

TITLE: On the Adsorption of Uranyl Nitrate From Organic Solvents With Anion-Exchange Resins

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.3, pp.365-371

TEXT: Strongly basic anion-exchange resins are widely used for separation of simple and complex anions from aqueous solutions. High molecular aliphatic amines are also used for this purpose. At present extraction with amines is considered as an ionic exchange on a liquid anionite. Also, for the extraction it is considered necessary that the element under separation from its aqueous solution is in the state of a complex anion. It is also possible to describe the extraction (and adsorption on a resin) starting from the formation of a non-charged complex, forming with an amine salt, the extractable complex compound. In both cases, after the extraction the same compound is found in the organic phase. An experimental proof of the mechanism of separation related to the formation of a complex compound can be obtained by investigating the separation with anion-exchange resins from solutions which do not contain an excess of anions and in which the

On the Adsorption of Uranyl ...

element under separation is known to exist in the form of a neutral complex. For this purpose, the authors investigated the separation of uranyl nitrate from a number of organic solvents on an anion-exchange resin AM, the capacity of which in respect of NO_3^- ion was 2.9 mg-equiv. per 1 g of resin. A weighed sample of the resin (1 g) in NO_3^- form was shaken with 10 ml of a solution of uranyl nitrate dihydrate for 20 to 25 hours. Previously it was established that this time is sufficient to attain equilibrium. Uranium was washed out from the resin with 0.1 N nitric acid and analysed colorimetrically. The analysis of the equilibrium liquid phase was also carried out. In experiments on the separation of uranium from organic extracts, air dried resin was used, in all other cases it was dried at 70°C. The coefficients of distribution of uranium between resin and organic solvents were calculated from the formula: K_p(mg U/g resin) / (mg U/ml solution). Data on the adsorption of uranium from 16 different solvents by dried resin were obtained. The results indicate that adsorption of uranylnitrate depends on the nature of the solvent. As the stability of uranyl trinitrate complex depends on the content of water in the organic phase, the influence of the latter on the

separation process was also investigated. It appears that the change in the dielectric constant of the solution due to an addition of water cannot explain the difference in the degree of adsorption and some change in the resin phase should be assumed. The presence of maximum on the adsorption curves at a certain content of water in the solution could be explained by the fact that at a certain water concentration, its presence leads to dissociation of the formed uranyl trinitrate complex. The influence of the concentration of the uranium in solution on its adsorption on the resin was also investigated. It was found that the coefficient of distribution (K_p) is inversely proportional to the uranium concentration. Thus at low concentrations, uranium can be particularly well separated from organic solvents. From the resin, uranium can be easily extracted with 0.1 N nitric acid, the desorption can also be done with tributylphosphate. On the basis of the results obtained, it is concluded that adsorption of uranylnitrate on resin can be related to the formation of complexes with the resin. There are 2 figures, 2 tables and 11 references: 2 Soviet-bloc and 9 non-Soviet-bloc. The four

most recent references to English language publications read as follows: L.Kaplan, R.A.Hildebrandt, M.Ader, J.Inorg.Nucl.Chem., 2,153 (1956); J.Kennedy, R.V.Davies, J.Inorg.Nucl.Chem., 12,193 (1959); W.Gerrard, E.D.Macklen, Chem.Rev., 59,1105 (1959); C.W.Davies, B.D.R.Owen, J.Chem.Soc., 1676 (1956).

SUBMITTED: July 5, 1960

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S/186/61/003/004/001/007
E141/E164

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A., and Nikitina, S.A.

TITLE: On the mechanism of the extraction of tetravalent plutonium with primary alkylamine from H_2SO_4 solutions

PERIODICAL: Radiokhimiya, 1961, Vol.3, No.4, pp. 396-402

TEXT: Extraction with high molecular weight aliphatic amines has recently found wide application. C.F. Coleman, K.B. Brown, J.G. Moore and K.A. Allen (Ref.1: Proceedings of the Second International Conference on the Peaceful Uses of Atomic Energy,) have described the extraction of U^{IV}, Th^{IV}, Ce^{IV} and Zr^{IV} from H_2SO_4 solutions, but they do not give any data on the mechanism of the reaction. The authors investigated this reaction mechanism. The authors used a mixture of primary aliphatic amines consisting of C_7 - C_9 atoms (d = 0.7846), the amount not exceeding 0.5%; chloroform was used as organic solvent. The Pu^{IV} content in the aqueous and the organic phase was determined by measuring the α-activity of aliquot samples on a standard device type D. Pu^{IV} was re-extracted from the organic phase into a 1.5N HNO_3 solution. Preliminary experiments showed that equilibrium was attained in not

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more than five minutes. The concentration of the amine in the starting solutions was determined by titrating with acid in an alcoholic solution whilst using bromophenolblue as indicator. After extraction the amine content in the aqueous and organic phase can be determined with alkalized solutions when the amine is converted into the base. The concentration of nitrate-ions in the organic phase was determined after re-extraction by titrating with indigo-red (Ref.6: J. Ungar, J. Appl. Chem., Vol.6, 2, 245 (1956)). The sulphate-ion was determined gravimetrically as $BaSO_4$ and in some cases after β-irradiation with S^{35} whilst using tagged H_2SO_4. When determining the distribution of the amine between the chloroform and the aqueous H_2SO_4 solution, the sulphate was found mainly in the aqueous solution. The coefficients of distribution of plutonium (α) increase with increasing concentration of the amine and of H_2SO_4 in the aqueous solution. This is possibly due to the formation of complex sulphate compounds of Pu^{IV} containing the amine. The composition of the separated compound was determined by investigating the dependence of $\alpha_{Pu(IV)}$ on the concentration of the amine at constant concentration of Pu^{IV} and H_2SO_4. It was found that two moles of amine nitrate

associate with one mole of the metal nitrate, forming the compound $(R_3NH)_2$ Me $(NO_3)_6$, where R = alkyl radical. The amine sulphate is not extracted by chloroform. The composition of the complex compounds extracted from H_2SO_4 solutions and from nitrate-sulphate solutions was confirmed by extraction and with the aid of absorption spectra. On the basis of concept on the anion-exchange character of extraction processes, carried out with amines, the separation of Pu^{IV} from H_2SO_4 solutions can be envisaged as a sulphate-ion exchange on an anion complex of Pu^{IV} which is formed in the aqueous phase:

$$Pu^{4+} + 3SO_4^{2-} \rightleftarrows Pu(SO_4)_3^{2-} ,$$

$$2(RNH_3)_2SO_4 + Pu(SO_4)_3^{2-} \rightleftarrows (RNH_3)_4Pu(SO_4)_4 + SO_4^{2-} \qquad (1)$$

The extraction can also be described by the formation of neutral plutonium sulphate which is formed from the amine sulphate of the extracted complex compound:

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$$Pu^{4+} + 2SO_4^{2-} \rightleftarrows Pu(SO_4)_2 ,$$

$$2(RNH_3)_2SO_4 + Pu(SO_4)_2 \rightleftarrows (RNH_3)_4Pu(SO_4)_4 \qquad (2)$$

Pu^{IV} is known to form complex sulphate compounds even when a considerable excess of nitrate-ions is present in the solution (Ref.5: A.A. Lipovskiy, N.B. Chernyavskaya, ZhNKh, Vol.4, 10, 2244 (1959)). Experiments were therefore carried out on the extraction of plutonium from a mixture of HNO_3 and H_2SO_4 solutions. At low concentrations of the amine the nitrate is hardly extracted by chloroform but with increasing concentration polymeric amine aggregates are formed which are extracted by the organic solvent. An increase in the concentration of HNO_3 in the aqueous solution at constant concentration of the amine leads to an increased content of the amine nitrate in the organic phase. Colloidal solutions of amine nitrate in chloroform show a different behaviour on extraction with respect to ions which are present in the aqueous solution and experiments were carried out to investigate the behaviour of the sulphate-ion during extraction from nitrate-sulphate solutions. When the concentration of HNO_3, and therefore

On the mechanism of the extraction S/186/61/003/004/001/007
E141/E164

also of the amine nitrate in the solution was small, the amine sulphate was not extracted into the chloroform. Deposits were formed at the phase boundary as well as during extraction from pure H_2SO_4 solutions. At concentrations of approximately 0.15N HNO_3 the deposits disappear and the concentration of the sulphate-ion in the organic phase increases sharply. A gradual substitution of the sulphate-ions and nitrate-ions takes place during the later stages. It is also suggested that the amine sulphate is separated from the nitrate-sulphate solutions because a finely dispersed phase is present in the chloroform, the dispersion being formed by the amine nitrate. Acknowledgments are expressed to L.N. Lazarev for his cooperation.

There are 5 figures, 2 tables and 7 references: 2 Soviet and 5 non-Soviet. The 4 English language references read as follows:

Ref.1: as in text above.
Ref.3: A.S. Wilson. Proceedings of the Second International Conference on the Peaceful Uses of Atomic Energy.
Ref.6: As in text above.
Ref.4: D.J. Carswell, J.J. Laurenset. J.Inorg.Nucl.Chem., V.11, 1, 69 (1959)

Card 5/5. SUBMITTED July 5, 1960.

31889
S/186/61/003/005/007/022
E071/E485

21.4200

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A., Kuzina, M.G.

TITLE: The extraction of uranium (VI) with solutions of trioctylamine nitrate

PERIODICAL: Radiokhimiya, v.3, no.5, 1961, 555-566

TEXT: The extraction of uranium (VI) with solutions of trioctylamine (TOA) in various diluents (carbon tetrachloride, benzene, trichloroethylene, chloroform, chlorobenzene, bromobenzene, tetrachloroethane, dichloroethane, butylbromide and nitro-benzene) and the dependence of the separation of uranium with an anion exchange resin AM on the composition of the aqueous solution were investigated. Equal volumes of the phases were used for the extraction. The coefficient of distribution was calculated from $\alpha_u = C_o/C_w$ where C_o and C_w - equilibrium concentrations of uranium in organic and aqueous phases. The re-extraction of uranium was done with a soda solution which was subsequently used for the colorimetric determination of uranium. In experiments on the separation of uranium with a resin, a strongly basic resin AM was used, its capacity in respect of NO_3^- was 2.9 mg/equiv per 1 g of air-dried resin. The coefficients of distribution were

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The extraction of uranium (VI) ...

calculated from

$$k_p = \frac{\text{g U/g resin}}{\text{g U/ml of solution}}$$

The composition of extracted compounds was determined by the absorption spectra. It was shown that the lack of correspondence in data obtained by various methods on the determination of the composition of uranium compounds in the organic phase is due to changes in the nature of the association of amine nitrate caused by the extraction of excess nitric acid. In all the cases investigated the extraction of uranium with TOA nitrate is related to the formation of a complex compound of uranyltrinitrate. The dependence of the coefficients of distribution of uranium on the composition of aqueous solution indicates that the formation of uranylnitrate molecules is necessary for the extraction of uranium. The extraction of uranium with TOA solutions in various diluents can be represented as a process of complex formation between neutral molecules of uranylnitrate and molecules of aminenitrate. The sorption of uranium with anion exchange resins can be described similarly. The analogy between the extraction of uranium with amines and its extraction with oxygen containing solvents from

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S/186/61/003/005/007/022
E071/E485

The extraction of uranium (VI) ...

nitric acid solutions as well as from solutions containing salting-out agents was pointed out. Changes in the extracting properties of TOA nitrate in various diluents is related to the polar properties of the diluents used and interactions in the system extracting agents-diluent. There are 4 figures, 3 tables and 20 references: 12 Soviet-bloc, 2 Russian translations of non-Soviet publications and 6 non-Soviet-bloc. The four most recent references to English language publications read as follows:
Ref.4: W.E.Keder, J.C.Sheppard, A.S.Wilson, J. Inorg. Nucl. Chem., 12, 314, 327 (1960); Ref.6: D.J.Carswell, J.J.Lawrence, J. Inorg. Nucl. Chem., v.111, 69 (1959); Ref.17: J.K.Foreman, J.R.McGowen, T.D.Swith, J.Chem. Soc., 738 (1959); Ref.18: A.G.Gobbe, A.G.Maddock, J. Inorg. Nucl. Chem., v.7, 2, 94 (1958).

SUBMITTED: October 27, 1960

X

Card 3/3

VDOVENKO, V.M.; LIPOVSKIY, A.A.; KUZINA, M.G.

Absorption of uranyl nitrate from organic solvents with the help of anion exchange resins. Radiokhimiia 3 no.3:365-371 '61. (MIRA 14:7)

(Uranyl nitrate)
(Anion exchange)

VDOVENKO, V.M.; LIPOVSKIY, A.A.; KUZINA, M.G.

Extraction of uranium VI by means of trioctylamine nitrate solutions. Radiokhimiia 3 no.5:555-566 '61. (MIRA 14:10)
(Uranium) (Trioctylamine)

S/186/62/004/006/001/009
E075/E433

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A., Nikitina, S.A.

TITLE: On the mechanism of extraction of $U^{(VI)}$ with solutions of tridecylamine fluoride

PERIODICAL: Radiokhimiya, v.4, no.6, 1962, 625-632

TEXT: In order to elucidate the mechanism of the extraction process, some relationships in the extraction of $U^{(VI)}$ from solutions in HF and NaF with tridecylamine fluoride (TDA) were studied. Using a spectrographic method it was shown that in organic solutions complex compounds $TDAHUO_2F_3$ and $(TDAH)_2UO_2F_4$ are formed. The composition of the complex compounds was also determined from the results of the analysis of equilibrium organic solutions and construction of the dependence $\lg \alpha_U$ on $\lg C_{TDA \cdot HF}$ (where α_U - the coefficient of distribution of uranium). It was shown that complex compounds with the ratio $F/U > 4$ were not formed. The investigation of the extraction of uranyl fluoride from aqueous solutions with tridecylamine fluoride indicated that the extraction takes place due to the formation of complexes of UO_2F_2 with one or two molecules of TDA·HF. The

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On the mechanism ...

best removal of $U^{(VI)}$ with amine fluoride is obtained on extraction from solutions of UO_2F_2 not containing an excess of fluorine ions. There are 5 figures and 7 tables.

SUBMITTED: August 26, 1961

Card 2/2

S/186/63/005/001/011/013
E075/E436

AUTHORS: Vdovenko, V.M., Lipovskiy, A.A., Nikitina, S.A.

TITLE: Investigation of the solvation of uranyl chloride with the molecules of tri-n-butyl phosphate

PERIODICAL: Radiokhimiya, v.5, no.1, 1963, 139-141

TEXT: Spectroscopic methods were used to investigate the nature of UO_2Cl_2 added to a solution of tri-n-butylphosphate (TBP) in CCl_4. In the original solution (saturated solution of anhydrous UO_2Cl_2 in TBP dissolved in CCl_4) the solute had the composition of $UO_2Cl_2 \cdot 2TBP$. As the proportion of TBP increased (100% TBP), the UV spectra of the solutions changed and indicated that UO_2Cl_2 coordinates with 3 molecules of TBP. The equilibrium constant for the formation of $UO_2Cl_2 \cdot 3TBP$ is 3.1 ± 0.2. The interaction of P = O groups with the U atom was shown in infrared spectra to be less strong in $UO_2Cl_2 \cdot 3TBP$ than in $UO_2Cl_2 \cdot 2TBP$. The complex with 4 molecules of TBP did not form, presumably due to steric hindrance. There are 3 figures and 1 table.

SUBMITTED: October 31, 1962

Card 1/1

VDOVENKO, V.M.; LIPOVSKIY, A.A.; NIKITINA, S.A.

Study of the solvation of UO_2Cl_2 with molecules of organophosphorus compounds by spectral methods. Radiokhimiia 5 no.5:585-591 '63. (MIRA 17:3)

VDOVENKO, V.M.; DEM'YANOVA, T.A.; KUZINA, M.G.; LIPOVSKIY, A.A.

Hydrogen bonding in alkyl ammonium salts. Part 1: Infrared spectra and structure of trioctyl ammonium nitrate. (MIRA 17:6)
Radiokhimiia 6 no. 1:49-55 '64.

VDOVENKO, V.M.; LIPOVSKIY, A.A.; NIKITINA, S.A.

Hydrogen bonding in alkyl ammoniun salts. Part 2: Infrared spectra and structure of tridecyl ammonium chloride.
Radiokhimiia 6 no. 1:56-62 '64. (MIRA 17:6)

LIPOVSKIY, A.A.; YAKOVLEVA, N.Ye.

Solvation of UCl_4 by n-tributyl phosphate molecules. Zhur. neorg. khim. 9 no.3:767-768 Mr '64. (MIRA 17:3)

LIFOVSKIY, A.A.; KUZINA, M.G.

Infrared spectra and structure of complex compounds of uranyl nitrate with cesium and pyridinium nitrates. Radiokhimiia 5 no. 6:668-674 '63. (MIRA 17:7)

VDOVENKO, V.M. (Leningrad); IVANOVSKIY, A.A. (Leningrad); KUZINA, M.G. (Leningrad); DEM'YANOVA, T.A. (Leningrad); NIKITINA, S.A. (Leningrad)

Hydrogen bonds in alkyl ammonium salts. Ukr. fiz. zhur. 9 no.4:453-457 Ap '64. (MIRA 17:8)

LIPOVSKIY, A.A.; KUZINA, M.G.

Infrared absorption spectra and structure of sulfate, bisulfate, and uranyl trisulfate of tridecyl ammonium. Zhur. neorg. khim. 10 no.6:1360-1368 Je '65. (MIRA 18:6)

L 17376-66 EPF(n)-2/EWT(m)/EWP(t) IJP(c) WW/JD/JG

ACC NR: AP6004504 SOURCE CODE: UR/ 86/65/007/005/0509/0516

AUTHOR: Vdovenko, V. M.; Lipovskiy, A. A.; Nikitina, S. A.; Yakovleva, N. Ye.

ORG: none

40
B

TITLE: Investigation of the extraction of U^{IV} and U^{VI} from hydrochloric acid solutions by means of tri-n-butylphosphate

SOURCE: Radiokhimiya, v. 7, no. 5, 1965, 509-516

TOPIC TAGS: uranium, organic phosphorus compound, solvent extraction, complex molecule

ABSTRACT: The uranium 155 was extracted from the aqueous phase by forming the complex compounds which accumulated in the organic phase. The optical method (percent transmission of 400-700 millimicrons) was applied to measurement of the concentration of uranium-tri-n-butylphosphate complexes in the organic phase. The extractions were conducted using either 20% in CCl_4 or 100% TBP. In the extraction experiments 0.5-12.8 molac HCl solutions and 5-10.9 molar LiCl solutions were used. It was found that the composition of the complexes formed is a function of both the

UDC: 542.61:546.791.4'791.6

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L 17376-66

ACC NR: AP6004504

HCl concentration in the aqueous phase and the TBP concentration in the inert solvent. In the case of U^{VI}, the following complexes were found in the extracts: $UO_2Cl_2(TBP)_2$, $UO_2Cl_2(TBP)_3$, and a complex anion $[UO_2Cl_3(TBP)_n]^-$. In the case of U^{IV}, the organic phase contained $UCl_4(TBP)_2$, $UCl_4(TBP)_3$, and a complex anion UCl_6^{2-}. Under the conditions near saturation equilibrium, both the U^{IV} and the U^{VI} are combined with two molecules of TBP. In the case of an excess of TBT, the complex involves three molecules of TBP. In the case of higher HCl concentration in the starting aqueous solution, accompanied by an excess of TBP, the extract contains anionic complexes of U^{IV} and U^{VI}. Orig. art. has: 2 figures, 2 tables, 6 formulas.

SUB CODE: 07/ SUBM DATE: 02Nov64/ ORIG REF: 013/ OTH REF: 006

Card 2/2 nst

L 17375-66 EWP(j)/EWT(m)/T RM
ACC NR: AP6004505 SOURCE CODE: UR/0186/65/007/005/0563/0572

39
37
B

AUTHOR: Lipovskiy, A. A.; Nikitina, [illegible] A.; Yakovleva, N. Ye.

ORG: none

TITLE: Investigation of the UCl_4 solvation by molecules of neutral organophosphate compounds by means of spectroscopic methods

SOURCE: Radiokhimiya, v. 7, no. 5, 1965, 563-572

TOPIC TAGS: uranium compound, organic phosphorous compound, complex molecule, solvent action, intermolecular complex, IR spectrometer, absorption spectrum

ABSTRACT: Solvation of UCl_4 by tri-n-butylphosphate (TBP), diisoamine ester of methylphosphonic acid (DAMPA), and tributylphosphineoxide (TBPO) was investigated using optical methods. Absorption spectra were taken with an SF-2M spectrophotometer (400-1100 millimicrons) and IKS-14IR spectrometer (7-11 millimicrons). Saturated solutions of anhydrous UCl_4 in solvents containing TBP-, DAMPA-, and TBPO in CCl_4 and benzene were used. It was found that in the case of an excess of phosphoorganic ligands in inert solvents, the complexes of the general formula UCl_4S_3 are

UDC: 548.56 : 546.791.4'131

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formed (where S is TBP, DAMPA, or TBPO). The equilibrium contents of the reaction $UCl_4S_2 + S \rightleftarrows UCl_4S_3$ are 55±3, 117±12, and 86±4 for TBP, DAMPA, and TBPO, respectively. Changes in the absorption spectra of U^{IV} which occur at high DAMPA- and TBPO concentrations are attributed to the coordinatively saturated compounds of the UCl_4S_4 type. The increase in ligands concentration was found to be reflected in weaker bonds between U^{VI}, and U^{IV} atoms and phosphoorganic ligands [44] in UCl_4S_3 type complexes. It was found that the electron affinity of heavy metal salts can be measured in terms of displacement of the IR absorption spectra of vibration of P=O group of the coordination compounds containing equal number of neutral ligands. The similarity of the absorption spectra of UCl_6^{2+} and UCl_4S_2 indicate that the ligands are arranged octahedrally around the U^{4+} ion in the UCl_4S_2 complex. A low symmetry is assigned to the UCl_4S_3 compound. The absorption spectra are graphed. Orig. art. has: 5 figures, 3 tables.

SUB CODE: 07/ SUBM DATE: 02Nov64/ ORIG REF: 010/ OTH REF: 009

LIPOVSKIY, A.A.; NIKITINA, S.A.

Infrared spectra and structure of trialkyl ammonium fluorides. Zhur. neorg. khim. 10 no.1:176-182 Ja '65. (MIRA 18:11)

1. Submitted July 18, 1963.

DEM'YANOVA, T.A.; LIPOVSKIY, A.A.

Infrared spectra and hydrogen bonding in dioctyl ammonium salts. Zhur.neorg.khim. 10 no.12:2801-2806 D '65.
(MIRA 19:1)

LIPOVSKIY, D.

Lipovskiy, D. "Our native land--the birthplace of the helicopter," Vestnik vozdush. flota, 1948, No. 12, p. 6-10

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

S/147/62/000/004/008/019
E031/E113

AUTHORS: Kan, S.N., and Lipovskiy, D.Ye.

TITLE: Stability of circular cylindrical frameworks under axial compression and transverse pressure

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, no.4, 1962, 79-90

TEXT: This is the first of three articles. The calculations are based on the assumption of a structurally orthotropic shell, the force elements being "smeared out". The energy method is used to calculate the critical stresses and it is assumed that under the action of the critical external forces the system has both a straight line and a curved form of equilibrium, corresponding to the minimum potential energy. The usual assumptions of the theory of thin shells are made. Considering first the critical stresses for the axial form of the loss of stability, the necessary condition for the minimum potential energy leads to a fourth order differential equation whose characteristic equation has roots $\lambda = \pm (\alpha \pm \beta i)$. The displacements can increase without limit if either $\alpha = 0$ or $\beta L = m\pi$, where L is the length of the shell.

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From the first condition can be obtained the critical axial compressive stress; the second condition gives the number of half-waves m along the generators at the loss of stability. The transverse pressure has no effect on the critical stresses. In the case of a non-axial form of the loss of stability, the assumption that the cross-sectional axis remains fixed and the condition for periodicity are used to give an expression for the tangential displacements, and the axial displacements are obtained from the condition that the mean surface is not displaced. Using these relations and the expression for the potential energy of unit length of the cylinder, Euler's equation leads to a fourth order differential equation which has the same complementary function as the previous equation. From the condition $\alpha = 0$ it is deduced that positive (internal) pressure increases the critical stress and negative pressure diminishes it. The condition $\beta L = m\pi$ gives a relation between the number of half-waves m along the generators and the number n of waves round the circumference at loss of stability. Expressions for the critical stresses may be obtained similarly for other boundary conditions. For the axial form of the loss of stability the critical stresses increase with

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the strengthening of the longitudinal elements, whereas in the non-axial form it is the transverse elements which are important. There are 3 figures.

SUBMITTED: March 19, 1962

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L 9086-65 EWT(d)/EWT(m)/EWA(d)/EWP(k)/EWA(h) Pf-4/Peb AFTC(p)/ASD(f)

ACCESSION NR: AP4040970 S/0147/64/000/002/0034/0046

AUTHOR: Lipovskiy, D. Ye.

B

TITLE: The edge effect in anisotropic circular cylindrical shells under combined axial and radial pressures

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SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 2, 1964, 34-46

TOPIC TAGS: shell, cylindrical shell, axisymmetrically loaded shell, anisotropic edge effect, edge effect damping, stiffened cylindrical shell

ABSTRACT: The author analyzes the edge effect in anisotropic circular cylindrical shells under uniform lateral and longitudinal pressure. A differential equation describing the edge effect (longitudinal variation of the radial displacement) is derived by a variational method, taking initial imperfections into account, and the edge effect in the neighborhood of elastic and rigid frames is determined. Expressions for the integration constants for certain boundary conditions at the end supports are given in a table. The damping of the edge effect distrubance is also analyzed. Finally, the length and amplitude of the strain waves, the damping decrement, and their dependence on the compressive and tensile stresses are discussed. Orig. art. has: 21 formulas, 4 figures and 2 tables.

Card 1/2

L 9086-65

ACCESSION NR: AP4040970

ASSOCIATION: none

SUBMITTED: 30Nov63 ENCL: 00 SUB CODE: AS

NO REF SOV: 005 OTHER: 000

Card 2/2

[illegible]

[illegible]tigating possible simplifications of the equations of stressed state and stability of cylindrical shells. Inzh. zhur. 5 no.3:522-530 '65. (MIRA 18:7)

AM4007943 BOOK EXPLOITATION S/

Bel'skiy, Vladimir Leonidovich; Vlasov, Ivan Petrovich; Zaytsev, Valentin Nikolayevich; Kan, Saveliy Nakhimovich (Doctor of Technical Sciences, Professor); Karnozhitskiy, Vladimir Pavlovich; Kots, Veniamin Markovich; Lipovskiy, David Yevseyevich

Aircraft design (Konstruktsiya letatel'nykh apparatov) Moscow, Oborongiz, 1963. 708 p. illus., biblio. Errata slip inserted. 6200 copies printed.

TOPIC TAGS: aircraft construction, aircraft strength, aircraft design, aircraft rigidity, aircraft hydraulics, aircraft pneumatics, aircraft servo , aircraft service life, aeroelasticity, aerodynamic heating

PURPOSE AND COVERAGE: The book is intended for aeronautical engineers concerned with aircaft design and manufacture. It may also be useful to students of technical schools of higher education. The principles of aircraft construction and strength are discussed. The principles of arrangement are examined, and design methods for strength and rigidity are given. External design loads are analyzed, and other

AM4007943

problems in the construction of airplanes, rockets, and helicopters are examined. The pneumatic and hydraulic aircraft systems as well as hydraulic servos are described. Considerable attention is paid to the problems of aeroelasticity, service life, and aerodynamic heating. The factual and numerical data and the schematic diagrams of aircraft are taken from non-Soviet sources. The authors thank K. A. Ly*nshinsky for writing article 3 of Ch. 2 and N. M. Mitrofanov who particpated in selection of material for some chapters. Special appreciation is expressed to A. M. Okulov for illustrating the book and to Doctors of Technical Sciences A. R. Bonin and Professor L. P. Ninokurov, and Candidates of Technical Sciences N. G. Savusya, L. A. Kolesnikov, A. A. Yarkho and V. P. Rusanov for their valuable suggestions during the review and revision of the manuscript.

TABLE OF CONTENTS [Abridged]:

Card 2/5

LIPOVSKIY, D. YE.

AID Nr. 967-13 15 May

COMBINED COMPRESSION AND FLEXURE OF STIFFENED CIRCULAR CYLINDRICAL SHELLS (USSR)

Kan, S. N., and D. Ye. Lipovskiy. Izvestiya vysshikh uchebnykh zavedeniy. Aviatsionnaya tekhnika, no. 1, 1963, 33-47. S/147/63/000/001/005/020

The states of stress and strain of circular cylindrical shells stiffened by stringers and rings are analyzed. The shells are subjected to transversal loading combined with axial compression uniformly distributed along the faces. The effect of manufacturing imperfections of the shell's middle surface is taken into account. The problem is discussed in a linear formulation under conventional assumptions of the theory of elastic thin shells. For solution of this statically indeterminate problem, Kan's method, employing energy principles and structural-mechanics techniques, is used. The axially symmetrical and asymmetrical states of stress (caused by axisymmetrical and arbitrary loading, respectively) are investigated, and formulas for the critical (buckling) load, radial displacements, bending moments, and longitudinal and circumferential stresses are derived. The behavior of shells under arbitrary

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AID Nr 967-13 15 May

COMBINED COMPRESSION [Cont'd] S/147/63/000/001/005/020

loadi g is shown in diagrams for various rigidity parameters. A numerical samp.e calculation is presented of a simply supported stiffened shell under combined uniform continuous loading consisting of axial compression on the faces and a downward vertical load on the inner side along the bottom generatrix. Nondimensional stresses relative to their critical values are calculated in the axial and circumferential directions, and their distribution in cross sections is shown in diagrams for length-to-radius ratios of 5 and 10. The effect of manufacturing irregularities on the shell's stress-strain state and the behavior of the stiffeners are also discussed. [VK]

Card 2/2

BEL'SKIY, Vladimir Leonidovich; VLASOV, Ivan Petrovich; ZAYTSEV, Valentin Nikolayevich; KAN, Saveliy Nakhimovich, dokt.tekhn.nauk, prof.; KARNOZHITSKIY, Vladimir Pavlovich; KOTS, Veniamin Markovich; LIPOVSKIY, David Yevseyevich; BONIN, A.R., doktor tekhn. nauk, retsenzent; SOKOLOV, A.I., inzh., red.; KUZ'MIN, G.M., tekhn. red.

[Design of aircraft] Konstruktsiia letatel'nykh apparatov. [By] V.L.Bel'skiy i dr. Moskva, Oborongiz, 1963. 708 p. (MIRA 16:8)

(Aircraft)

L 13805-63 EWP(r)/FCS(f)/BDS/EWT(m) AFFTC/APGC EM

ACCESSION NR: AP3004719 S/0147/63/000/002/0034/0043

AUTHOR: Kan, S.N.; Lipovskiy, D. Ye.

TITLE: The load-carrying capacity of stiffened thin circular cylindrical shells under compression

SOURCE: IVUZ. Aviats. tekhnika, no. 2, 1963, 34-43

TOPIC TAGS: load-carrying capacity, compressed cylindrical shell, stiffened shell, thin shell, shell, critical stress, crushing load, initial deflection, manufacturing imperfection

ABSTRACT: The article, which is the conclusion of the work of the authors published in IVUZ, "Aviatsionnaya tekhnika," No. 4, 1962, and No. 1, 1963, presents a simple method for predicting the load-carrying capacity of a thin, compressed, circular cylindrical shell stiffened by a system of frames and stringers and discusses the effect of constructional parameters on the shell's capacity. The method is based on the assumption that the most essential factor reducing the load-carrying capacity of the shell is the manufacturing imperfection (initial deflection), which causes the stringers of a shell under axial compression to be subjected to a combination of compression and transverse flexure. The cases

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L 13805-63

ACCESSION NR: AP3004719

of axially symmetrical and asymmetrical initial deflection are discussed, and the formulas for critical (crushing) stresses for stringers are derived. The effect of the internal pressure and of the rigidity of frames on the magnitude of the critical stresses is analyzed. Illustrative numerical calculations of the critical stresses and crushing load of a shell are given for both symmetrical and non-symmetrical cases. The possibility of extending the application of the proposed method to the case of lateral loading, which is equivalent to a certain initial deflection, and to other types of deformation (bending, combined compression and bending) of shells is mentioned. Orig. art. has: 2 figures and 21 formulas.

ASSOCIATION: none

SUBMITTED: 19Mar62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: AP NO REF SOV: 005 OTHER: 005

Card 2/2

KAN, S.N.; LIPOVSKIY, D.Ye.

Longitudinal and lateral bending of framed circular cylindrical shells. Izv.vys.ucheb.zav.;av.tekh. 6 no.1:33-47 '63.
(MIRA 16:6)

(Elastic plates and shells)

SMOYLOVSKIY, N.; LIPOVSKIY, G.

Analysis of the efficiency of capital investments for the improvement of harbor facilities. Rech. transp. 20 no.5:11-13 My '61. (MIRA 14:5)

1. Glavnyy inzh. proyekta Novosibirskogo otdeleniya Giprorechtransa (for Smoylovskiy). 2. Nachal'nik Novosibirskogo porta (for Lipovskiy).
(Harbors--Finances) (Capital investments)

STAROVEROV, Yu. (Astrakhan'); BONDAR', N. (Kiyev); NEPOMNYASHCHIY, V. (L'vov); MALASHENKO, A. (Krasnodar); LIPOVSKIY, G. (Minsk); AMALYAN, A. (Sukhumi)

Editor's mail. Okhr.truda i sots.strakh. 6 no.2:28 F '63. (MIRA 16:2)

(Industrial hygiene)

LIPOVSKIY, G.

Cut peat is an economic fuel. NTO no.6:40 Je '59. (MIRA 12:9)

1.Zamestitel' predsedatelya Belorusskogo respublikanskogo pravleniya nauchno-tekhnicheskogo obshchestva bumazhnoy i derevoobrabatyvayushchey promyshlennosti.
(Peat)

LIPOVSKIY, G.

Republic conference on automation. NTO no.9:50-51 S '59.
(MIRA 13:1)

1. Zamestitel' predsedatelya Belorusskogo respublikanskogo pravleniya Nauchno-tekhnicheskogo obshchestva bumazhnoy i derevoobrabatyvayushchey promyshlennosti, Minsk.
(White Russia--Paper industry) (White Russia--Automation)

LIPOVSKIY, G.I.

Interfactory school is an instrument of exchange of advanced methods and experience. Bum.prom. 34 no.7:32 Jl '59.
(MIRA 12:10)

1. Zamestitel' predsedatelya Belorusskogo respublikanskogo pravleniya Nauchno-tekhnicheskogo otdela bumazhnoy i derevoobrabatyvayuschey promyshlennosti.
(White Russia--Paper industry)

LIPOVSKIY, G.I.

Conference on the automatic control of production processes in the paper and hardboard industries. Bum.prom. 34 no.10:28-29 O '59. (MIRA 13:2)

1. Zamestitel' predsedatelya Belorusskogo respublikanskogo pravleniya Nauchno-tekhnicheskogo obshchestva bumazhnoy i derevoobrabatyvayushchey promyshlennosti.
(Paper industry--Congresses) (Automatic control)
(Hardboard)

18.2000

78051
SOV/130-60-3-20/23

AUTHORS: Dorofeyev, B. A. (Director), Lipovskiy, I. Ye. (Chief of the Experimental and Research Laboratory)

TITLE: Stone Casting for the Industry

PERIODICAL: Metallurg, 1960, Nr 3, pp 35-36 (USSR)

ABSTRACT: In 1958 the first stone casting plant in the Ukraine was put into operation in Stalino. The charge of the Stalino plant is made up of (%): rock--70; dolomite dust--20; quartz sand--5-10; chromium-magnesite powder--max 5. Chemical composition (%):

Composition of Charge Materials (%)

Components	SiO_2	Al_2O_3	$FeO + Fe_2O_3$	CaO	MgO	Others
Rock	50--54	20--25	9--11	2--4	3--5	5--6
Dolomite	9.8	3.8	2.3	50.2	31.5	2.4
Sand	97.40	0.13	0.39	1.44	0.40	0.24

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The new charge and the technological process were developed by engineers A. I. Sibilev and N. A. Bukhavtsev in cooperation with the authors. All raw materials except rock are precrushed before delivery to the plant. Rock is crushed before charging. The melting period in 1-1.2 ton coke-fired furnaces varies between 2 and 2.5 hr at 1,450° C. The plant specializes in the production of 185 x 115 x 20 mm plates used for the lining of various bins and conveyers of ore, coke, sand, etc. The plant also produces 1,200 mm long pipes (150 and 190 mm diam) and 250 x 250 x 40 mm plates. At present the plant is trying to introduce ball mill linings and balls as well as insulators and intricately shaped plates. The plates are cast in heat-resistant steel chill molds and crystallized in a muffle furnace at 950-1,000° C. Final annealing in a Lehr furnace takes 14 hr. Temperature of the finished plates as they leave the furnace is 50-60° C. Technical characteristics of stone casting at the Stalino plant are:

Specific weight (g/cm^3)	3.08
Volumetric weight (g/cm^3)	2.8-2.9
Oxidation resistance (according to State Standards GOST 475-53) (%):	
in sulfuric acid	99.75
in hydrochloric acid	99.44
Abrasion resistance (g/cm^2)	0.03-0.04
Mohs' Scale hardness	8-8.5
Mechanical strength (kg/cm^2):	
compression	to 2,500
bending	600
tensile	150
Water absorption (%)	0.01

Heat resistance is determined by heating specimens to 100° C and water-cooling at 18° C, and equals 7 to 10 temperature changes.

Stone Casting for the Industry

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Chemical Composition of Casting (%)

SiO_2	Al_2O_3	CaO	MgO	FeO + Fe_2O_3	Na_2O + K_2O
45-49	18-20	10-13	8-10	8-9	2-2.5

Structure of the stone castings is dense and uniform. Hardness and abrasion and oxidation resistance indicate the applicability of these castings in numerous fields. The authors recommend their use in roller-type screening machines, working wheels, and bodies of sand pumps, etc. The troughs and bins at the new Krivoy Rog Beneficiation Combine (Novokrivorozhskiy obogatitel'nyy kombinat) are lined with cast stone plates. Cast stone pipes are used at Chumakov Central Beneficiation Plant (Chumakovskiy TsOF), Mironovo State Electric Power Plant (Mironovskaya GES), etc. The economic advantages as a result of the application of cast stone parts are tremendous: The life of the equipment increases from 5 to 10 times and thousands of tons of metal are saved.

ASSOCIATION: Stalino Stone Casting Plant (Stalinskiy kamneliteynyy zavod)

Card 4/4

DOROFEYEV, V. A., inzh.; LIPOVSKIY, I. Ye., inzh.

Use of cinders from electric power plants for stone casting. Energetik 10 no.8:12-14 Ag '62. (MIRA 15:10)

(Stone, Cast)

LIPOVSKIY, I.Ye., inzh.; NASHEL'SKIY, A.M., inzh.

Investigating the mechanical strength of cast stone at high temperatures. Stek. i ker. 22 no.3:5-6 Mr '65. (MIRA 18:10)

1. Donetskiy kemneliteynyy zavod.

DOROFEYEV, V.A., inzh.; LIPOVSKIY, I.Ye., inzh.; KORABLIN, V.P., inzh.; KHAN, B.Kh., kand. tekhn. nauk

Obtaining stone castings of amphibolites. Mashinostroenie no.1:38-41 Ja-F '63. (MIRA 16:7)

1. Donetskiy kamnelitevyy zavod (for Dorofeyev, Lipovskiy). 2. Institut liteynogo proizvodstva AN UkrSSR (for Korablin, Khan).

(Amphibolite)

LIPOVSKIY, L. M.
and others

"A Method for Measuring Resistance of Oxide Coatings in Receiver and Amplifier Tubes," pp 3-11, ill

Abst: A method is examined for measuring the impedance of a layer of oxide coating, that is, the entire series of three layers. The applicability of this method is shown for various types of tubes with oxide cathodes from the viewpoint of reliability of measurement and most rational conditions of measurement.

SOURCE: Sbor. Materialov po Vakuumnoy Tekhnike Gos. Soyuzn. Ordena Lenina Zavoda (A Collection of Material in Vacuum Technology of the State All-Union Order of Lenin Factory), No 13, Moscow-Leningrad, Gosenergoizdat, 1957

Sum 1854

KOSHLAKOV, M.V.; LIPOVSKIY: L.S.

New pressure gas-tank equipped truck ZIS-156A. Avt.trakt.prom. no.8:22a-b Ag '53. (MLRA 6:8)
(Motor trucks)

LIPOVSKIY, M., kand.tekhn.nauk; NIKIFOROV, Yu.Ye., inzh.; SPIVAKOV, M.S., inzh.

For further lowering of the weight and construction costs of apartment houses. Biul.tekh.inform. 5 no.1:6-8 Ja '59. (MIRA 12:4)
(Precast concrete)

KULAKOV, N.V., [illegible]

Dynamics of the vertical migration of fuel gas. Geol. nefti i gaza 8 no.3:21-25 Mr '64. (MIRA 17:6)

1. Nizhne-Volzhskiy nauchno-issledovatel'skiy institut geologii i geofiziki.

LIPOVSKIY, M.A.

Sulfate-ion determination in natural waters by amperometric titration. Trudy VNIGNI no.11:273-277 '58. (MIRA 13:1)
(Water--Analysis) (Conductometric analysis) (Sulfates)

LIPOVSKIY, M.A.

Thermodynamic basis of regularity in the distribution of oil and gas fields. Geol. nefti i gaza 6 no.1:18-23 Ja '62.
(MIRA 15:1)

1. Nizhne-Volzhskiy Nauchno-issledovatel'skiy institut geologii i geofiziki.

(Petroleum geology)
(Gas, Natural--Geology)

LIPOVSKI, M.A. [Lipovskiy, M.A.]

Thermodynamic substantiation of the laws governing the distribution of petroleum and gas deposits. Analele geol geogr 16 no.3:67-72 Jl-Ag '62.

L 21773-66 EWT(d)/EWP(h)/EWP(l)
ACC NR: AP6002597 (A) SOURCE CODE: UR/0286/65/000/023/0093/0093

AUTHORS: Lipovskiy, M. I.; Karelin, A. K.

ORG: none

TITLE: Vertical vibrational conveyer. Class 81, No. 176820

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 93

TOPIC TAGS: conveying equipment, conveyer transportation system

ABSTRACT: This Author Certificate presents a vertical vibrational conveyer for transporting friable materials. It consists of a load-carrying unit in the form of a tube with a bottom, loading and unloading devices, and a vibration drive. To provide for the transportation of materials in a smooth tube by only the longitudinal vibrations of the tube, the loading device is in the form of a feed tube placed inside the load-carrying unit. One end of the tube is mounted coaxially with the load-carrying tube with a gap between the end and convex bottom (see Fig. 1). The other end is brought out through the side of the load-carrying tube into an annular hollow under a loading hopper and is fastened between the external surface of the load-carrying tube and two truncated cones. The larger

Card 1/2 UDC: 621.867.522.2

L 21773-66
ACC NR: AP6002597

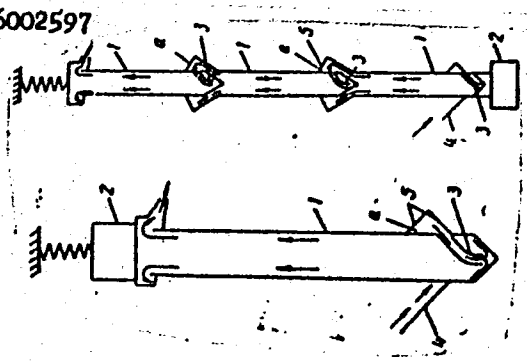

Fig. 1. 1 - load-carrying tube; 2 - vibration drive; 3 - feed tube; 4 - loading hopper; 5 - truncated cones; 6 - annular hollow.

bases of the truncated cones are connected together, and the smaller--to the load-carrying tube. To increase the transportation height, the load-carrying tube is made of several sections rigidly fastened together, each having a convex bottom and feed tube. The annular hollow is used to transfer material from one section to another. Orig. art. has: 1 diagram.

SUB CODE: 13/ SUBM DATE: 14Aug63

Card 2/2 ULR

NAMESTNIKOV, Aleksandr Fedorovich, kand. tekhn. nauk; BELOUSOV,D.P., inzh.; VOLKOV,Ye.N., kand.tekhn.nauk; LIPOVSKIY,M.S., inzh.; SAVZDARG,V.E., red.; BALLOD,A.I., tekhn.red.

[Collective-farm cannery] Kolkhoznyi konservnyi zavod. Moskva, Gos.izd vo sel'khoz.lit-ry, 1959. 275 p. (MIRA 14:5)

1. Nauchno-issledovatel'skiy institut konservnoi i ovoshcheposhil'noy promyshlennosti, Moskva, Novoslobodskaya, 7 (for Namestnikov). 2. Gipropishcheprom, Butyrskiy val, 68 (for Belousov)

(Canning industry--Equipment and supplies)

LIPOVSKY, Pavel

How we produce large shell cores. Slevarenstvi 12 no.5:190-191 My '64.

1. Zavody Jana Svermy, Brno.

18(5,7) SOV/135-59-9-18/23

AUTHORS: Balkovets, D. S., Doctor of Technical Sciences and Lipovskiy, P. I., Engineer

TITLE: Moscow Oblast Conference of Welders

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 9, pp 43-45 (USSR)

ABSTRACT: The Oblast' Conference of Welders was convened in Moscow from March 18-20. The results of scientific and production work in 1958 were discussed at this conference. The conference was convened by the Welding Section of MONITOMASh. More than 400 representatives of different organizations in Moscow and the Moscow oblast, as well as representatives from Leningrad, Chelyabinsk, Penza and other places participated in the conference. It was opened by the Corresponding Member of AS USSR N. N. Rykalin. 47 reports were heard and discussed at the conference. A. A. Vikhirev and S. S. Gudimenko spoke on welding problems in the Moscow area. N. A. Ol'shanskiy (MVTU) spoke on welding by electronic ray in vacuum and the same theme was discussed by N. N. Rykalin, A. A. Yerokhin, L. L. Silin and V. A. Kuznetsov (IMET). V. D.

Card 1/3

Moscow Oblast' Conference of Welders

Kodolov (IMET) spoke on arc and "electric slag" welding and I. D. Kulagin and V. A. Nikolayev (IMET) discussed metal processing methods. This was also the theme of a report by K. V. Vasil'yev. The weldability of molybdenum was examined by A. I. Pugin and M. Kh. Shorshorov. A. S. Gel'man and M. P. Sandler (TsNIITMASh) discussed welding of large diameter pipes and R. I. Zakson and V. D. Voznesenskiy (NIITRAKTOROSEL'KhOZMASh) examined automatic welding methods. Improved weld quality was the theme of N. M. Novozhilov and A. M. Sokolova (TsNIITMASh). V. N. Suslov (TsNIITMASh) reported on semi-automatic welding. K. V. Lyubavskiy, V. M. Nikitin and G. F. Murov (MVMI) spoke on automatic welding within CO_2 of pre-hardened devices of 30KhGSA steel. A. V. Petrov (NIAT) spoke on automatic welding of thin, heat resistant steel within argon. V. V. Kudinov (VNIIAVTOGEN) reported on a manual burner E3R-3-58 for argon welding. Ye. V. Vasil'yev spoke on a new electro-riveter. Automatic flux welding was the theme of N. P. Yemel'yanov and F. S. Tkachenko (TsNIIMPS), as well as of M. I. Sorokina (MVMI), B. N.

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